

Remarks:

Claims 1-19 remain for consideration in this application. In view of the foregoing amendments and remarks hereunder the rejections of the last office action are respectfully traversed.

The Examiner objected to the application under 37 CFR 1.172(a) as the assignee has not established its ownership interest in the patent for which reissue is being requested. A new Consent of Assignee document is being filed herewith. The new consent document states the reel and frame number where the assignment of the inventors' rights to the Kansas State University Research Foundation is recorded. The consent document is executed by Ron W. Trewyn, President of the Kansas State University Research Foundation.

The Examiner objected to the amendments filed on August 8, 2001, and January 28, 2002 as failing to comply with the formalities required by 37 CFR 1.173(b). Applicants have resubmitted these amendments as noted above. With the exception of claim 14 which will be explained below, the amendments to the specification and claims are exactly the same as those submitted earlier except that now these portions are underlined as required by §1.173(b).

The Examiner rejected claims 1-19 as being based upon a defective reissue declaration under 35 U.S.C. 251, because the error relied upon was too vague and not directed to the added claims. Applicants herewith submit a supplemental declaration which states that the error relied upon for reissue is the failure to claim removing an acid from an acid-bearing gas target stream, as suggested by the Examiner. Therefore Applicants submit that this rejection has been overcome.

The Examiner requested that Applicants provide a copy of PTO-1449 listing all of the references cited in the patented application (US '249). A copy of this form is attached hereto as requested.

The Examiner rejected claims 14-19 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended claim 14 to correct the Markush group terminology in accordance with the Examiner's suggestion and have also removed the term "starting" in line 4. Furthermore, Applicants have amended the Markush group adding the compounds ZnO and Zn(OH)₂. Support for this amendment may be found at column 2, lines 22-23 of the '236 patent, which states "More preferably, the powder is an oxide or hydroxide of Mg, Ca, Ti, Zr, Fe, V, MN, Ni, Cu, Al, or Zn." (Emphasis added.) Therefore, Applicants request that the §112, second paragraph rejection be withdrawn.

Finally, the Examiner rejected claims 14-19 under 35 U.S.C. 251 as being an improper recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. More specifically, claims 14-19 were rejected for failure to include the following limitations:

(a) "said body having a total pore volume which is at least 90% of the total pore volume of said particles prior to said agglomeration thereof"; and

(b) "said body having a density of from about 0.2 to about 2.0 g/cc."

In the Examiner's rejection under 35 U.S.C. § 251 for improper recapture, the Examiner correctly cites several Federal Circuit decisions which spell out the standard for determining when improper recapture has occurred in a reissue application (i.e., *Hester Industries, Inc. v. Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement*, 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997); *Ball Corp. v. United States*, 729 F.2d 1429, 1436, 221 USPQ 289, 295 (Fed. Cir.

1984)). Applicants, however, respectfully submit that the Examiner's application of the legal standard set forth by the Federal Circuit is incomplete.

The above-cited Federal Circuit cases (especially *Hester* and *Clement*) set forth three steps that must be followed when determining whether improper recapture has occurred in a reissue application. The steps can be summarized as follows:

Step 1: Determine whether and in what respects the reissue claims are broader than the original patent claims. See, *Hester*, at 1480; *Clement*, at 1468.

Step 2: Determine whether the broader aspect of the reissue claim relates to surrendered subject matter by looking to the prosecution history for arguments and changes made in an effort to overcome prior art rejections. See, *Hester*, at 1480; *Clement*, at 1468, 1469.

Step 3: Determine whether the surrendered subject matter has crept into the reissue claim by comparing the scope of the reissue claim with the scope of the claim *canceled* during prosecution of the original patent. See, *Hester*, at 1482; *Clement*, at 1469.

Applicants submit that the Examiner has failed to apply Step 3 of the recapture analysis laid out by the Federal Circuit. Nowhere in the Office Action does the Examiner attempt to compare the scope of the reissue claim with the scope of the claim *canceled* during prosecution of the original patent. Rather, the Examiner only compares the reissue claims with the original *patented* claims.

The Federal Circuit has consistently held that even if Steps 1 and 2 indicate that improper recapture has occurred, Step 3 can allow the reissue claim to escape the recapture rule entirely. See, *Clement*, at 1469; *Ball*, at 1436. Thus, even if the broadening aspect of the reissue was surrendered during prosecution of the original patent (i.e., Steps 1 and 2 indicate that improper recapture has occurred), the reissue claim can avoid the recapture rule entirely if the comparison of the scope of

the reissue claim and the canceled claim reveals that the surrendered subject matter has not “crept back into” the asserted reissue claims (i.e., Step 3 has not been met and the recapture rule does not apply). See, *Clement*, at 1469; *Ball*, at 1436. The Court in *Clement* expresses this Step 3 aspect of the recapture analysis as follows:

Once we determine that an Applicant has surrendered the subject matter of the canceled or amended claim, we then determine whether the surrendered subject matter has crept into the reissue claim. Comparing the reissue claim with the canceled claim is one way to do this. If the scope of the reissue claim is the same as or broader than that of the canceled claim, then the patentee is clearly attempting to recapture surrendered subject matter and the reissue claim is, therefore, unallowable. In contrast, a reissue claim narrower in scope escapes the recapture rule entirely. *Clement*, at 1469.

The Court in *Hester* expressed the Step 3 aspect of the recapture analysis as follows:

Having concluded that there has been a surrender, we must next determine whether the surrendered subject matter has crept back into the asserted reissue claims. When the surrender occurs by way of claim amendment or cancellation, comparing the reissue claim with the canceled claim is one way to do this. *Hester*, at 1482.

The Court in *Ball* expressed the Step 3 aspect of the recapture analysis as follows:

The recapture rule bars the patentee from acquiring, through reissue, claims that are of the *same* or of *broader scope* than those claims that were canceled from the original application. On the other hand, the patentee is free to acquire, through reissue, claims that are *narrower* in scope than the canceled claims. *Ball*, at 1437.

Thus, the Step 3 analysis requires a determination as to whether the reissue claim is broader or narrower in scope than the *canceled* claim of the original patent. Note that this determination is based on a comparison of the reissue claim with the *canceled* claim of the original application, *not* a comparison with the originally *patented* claim. If the reissue claim is broader in all aspects than the canceled claim, then the recapture rule bars the claim. See, *Clement*, at 1470. If the reissue

claim is narrower in all aspects than the canceled claim, then the recapture rule does not apply. See, *Clement* at 1470.

If the standard the Examiner is attempting to apply here were correct, then it would be impossible to obtain a broadening reissue where the originally filed claims had ever been amended to overcome a prior art rejection.

Application of the correct standard in the present application requires that reissue claim 14 be compared with the narrowest claim *canceled* from the original patent application. The narrowest method claim which was canceled in the original application (or in this instance amended by cancelling limitations in favor of narrower limitations) was application claim 27. This claim ultimately issued as claim 9.

Claim 27 was amended for the last time on November 2, 1999, in the following manner:

27. (Amended) A method of adsorbing a target compound comprising the steps of: providing a quantity of the composite of claim 11; and contacting said composite with a target compound selected from the group consisting of acids, alcohols, aldehydes, compounds containing an atom of P, S, N, Se, or Te, hydrocarbon compounds, and toxic metal compounds under conditions for adsorbing at least a portion of said target compound.

Claim 11 was amended for the last time on February 25, 2000, in the following manner:

11. (Amended) A composite comprising a self-sustaining body formed of a plurality of agglomerated [powder] nanocrystalline particles having an average crystallite size of up to about 20 nm and selected from the group consisting of metal oxides and hydroxides and mixtures thereof, said body having a total pore volume which is at least about [50%] 90% of the total pore volume of said particles prior to agglomeration thereof, said body having a density of from about 0.2 to about 2.0 g/cm³.

In order to arrive at the narrowest version of claim 27 which was *canceled* from the original application, one must remove all underlined portions from claims 27 and 11 above. The limitations

of density and 90% pore volume were never *canceled* from any claim in the original application, therefore, the doctrine of recapture does not require their presence in the reissue claims. The Table below compares the limitations of narrowest form of claim 27, which was canceled in favor of the claim which was ultimately allowed, with the limitations presently set forth in claim 14.

Table

| Canceled claim 27 | Reissue claim 14 | Comparison |
|--|--|----------------------|
| A method of adsorbing a target compound comprising: | A method of removing an acid from a gas stream comprising: | Claim 14 narrower |
| Providing a quantity of composite comprising: | Providing a quantity of: | Same |
| a self-sustaining body formed of a plurality of agglomerated nanocrystalline particles, | self sustaining bodies formed of agglomerated, powder nanocrystalline metal oxide particles, | Claim 14 narrower |
| selected from the group consisting of metal oxides and hydroxides and mixtures thereof, | selected from the group consisting of CaO, Ca(OH) ₂ , ZnO, Zn(OH) ₂ and admixtures thereof | Claim 14 narrower |
| said body having a total pore volume which is at least about 50% of the total pore volume of particles prior to agglomeration thereof; | said bodies having a total pore volume which is at least about 50% of the total pore volume of said particles prior to agglomeration thereof | Same |
| N/A | the particles having an average crystallite size of up to about 20 nm, | Claim 14 narrower |

| | | |
|---|---|-------------------|
| contacting said composite with a target compound under conditions for adsorbing at least a portion of said target compound. | passing a stream of acid-bearing gas into contact with said self-sustaining bodies under conditions for removing at least a portion of said acid from the gas stream. | Claim 14 narrower |
|---|---|-------------------|

From the above table it is readily apparent that reissue claim 14 is indeed narrower than the narrowest claim which was canceled from the original application, therefore, there is no attempt by the Applicants to recapture subject matter which was surrendered and the doctrine of recapture is not applicable.

Since reissue claim 14 is narrower than the narrowest claim *canceled* from the original application, and is broader than the broadest patented claim, the next inquiry is whether the reissue application was filed within two years of the issuance of the original patent. The '236 patent originally issued on July 25, 2000. The present reissue application was filed on August 17, 2001, well within the two-year time limit for filing a broadening reissue.

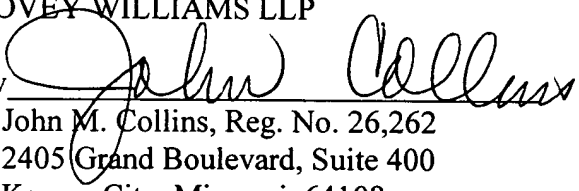
Because reissue claim 14 is narrower than the narrowest claim canceled from the original application, and because this reissue application was filed within two years from the date of issuance of the '236 patent, the doctrine of recapture does not bar Applicants from seeking the present broadening reissue claims.

In view of the foregoing, a Notice of Allowance appears to be in order and such is courteously solicited. Any fee which is due in connection with this notice should be applied against our Deposit Account No. 19-0522.

Respectfully submitted,

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ATTORNEYS FOR APPLICANT(S)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Specification:

In column 1, line 7, immediately before the section "BACKGROUND OF THE INVENTION," the following paragraph was inserted:

FEDERALLY SPONSORED RESEARCH/DEVELOPMENT PROGRAM

This invention was made with government support under Grants DAAH-04-93-G-0328 and DAAG55-97-C-0036 awarded by the United States Army Research Office. The government has certain rights in the invention.

Claims:

The following claim has been amended.

14. (Amended) A method of removing an acid from a gas stream comprising the steps of:

providing a quantity of self-sustaining bodies formed of agglomerated, nanocrystalline metal oxide particles selected from the group consisting of CaO , [and] Ca(OH)_2 , ZnO , Zn(OH)_2 , and admixtures thereof, the [starting] particles have an average crystallite size of upto about 20 nm, said bodies having a total pore volume which is at least about 50% of the total pore volume of said particles prior to agglomeration thereof;
and

passing a stream of acid-bearing gas into contact with said self-sustaining bodies under conditions for removing at least a portion of said acid from the gas stream.

Claims 15-19 remain unchanged with the exception of underlining in accordance with 37 CFR 1.173(b).